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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/031,182 | 06/03/2002 | George Trevor Dimond | BSW-1 | 4783 |

22855 7590 10/01/2002
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| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 1762 | |

DATE MAILED: 10/01/2002

8

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-----------------|--------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/031182 | |
| Examiner | Group Art Unit | |

mfp-8

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Priod for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

Responsive to communication(s) filed on 6/3/02

This action is **FINAL**.

Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

Claim(s) 1-19, 21-24, 27-32 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

Claim(s) _____ is/are allowed.

Claim(s) 1-15, 17-19, 21-24, 27-32 is/are rejected.

Claim(s) 16 is/are objected to.

Claim(s) _____ are subject to restriction or election requirement

Application Papers

The proposed drawing correction, filed on _____ is approved disapproved.

The drawing(s) filed on _____ is/are objected to by the Examiner

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

All Some* None of the:

Certified copies of the priority documents have been received.

Certified copies of the priority documents have been received in Application No. _____.

Copies of the certified copies of the priority documents have been received

in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

| | |
|--|---|
| <input checked="" type="checkbox"/> Information Disclosure Statement(s), PTO-1449, Paper No(s). <u>3</u> | <input type="checkbox"/> Interview Summary, PTO-413 |
| <input checked="" type="checkbox"/> Notice of Reference(s) Cited, PTO-892 | <input type="checkbox"/> Notice of Informal Patent Application, PTO-152 |
| <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review, PTO-948 | <input type="checkbox"/> Other _____ |

Office Action Summary

Art Unit: 1762

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. Claims 1,16 are objected to because of the following informalities: (1) claim 1, line 2, the transitional term "including" should be replaced with a term/phrase consistent with US patent terminology, e.g. "comprising". (2) claim 16, line 2, the presence of "is" makes the wording of the sentence awkward.
Appropriate correction is required.

Claim Rejections - 35 USC § 112

3.The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 5-7,11,13,14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 1762

- Claim 5 is vague and indefinite because (1) the term "substantially" fails to distinctly claim the intended range, and (2) it is unclear what is the ratio of pigment to carrier/fixer since the pigment appears to be described as a percentage.
- Claim 6 is vague and indefinite because the phrase "temperature recommended by the manufacturer" is confusing because a manufacturer would not necessarily recommend temperatures for each potential application, or may not make a recommendation at all, so the intended temperature is unclear; "manufacturer" lacks proper antecedent basis.
- Claim 7 is vague and indefinite because the term "substantially" fails to distinctly claim the intended heating range.
- Claim 11: the term "small" in claim is a relative term which renders the claim indefinite because it is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. "Small" does not convey the intended amounts of additives.
- Claim 13: line 6, it is unclear if "a substrate surface" of line 6 is the same or different from that of line 2; line 9, the relationship of the "heat curing system" to

Art Unit: 1762

the overall structure of the apparatus is unclear, and it is the structure of the apparatus on which patentability is based.

- Claim 14: the relationship of the "cooling system" to the overall structure of the apparatus is unclear.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by

Gerland et al US 5453292.

Gerland et al teaches to prepare a powder comprising a luminophore (luminous particle) enveloped with glass flux (binder/ fixer) which is deposited onto a substrate in a finely dispersed form, after which it is heated at elevated temperatures so that the glass will melt and anchor/ adhere the luminophore particles to the substrate. The process of making the luminophore-glass powder

Art Unit: 1762

requires drying to "at least" remove solvent, including complete drying so it can be applied to the substrate in finely dispersed form.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Art Unit: 1762

9. Claims 27,28,31,32 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Category WO96/26991 (US 6074739 is used in lieu of an official translation because the patent claims priority on the WO96 patent).

Category teaches articles having luminescent layers comprising a phosphor/luminescent pigment and binder which is coated onto substrates explicitly citing a **handrail** (col. 6, 3), or other escape tools. The product would be the same as, or only slightly different than, the product by process claims of 27 and 31 since the product claims contain no limitations on the product itself, on which patentability is based, see MPEP 2113. Similarly, the product made of the apparatus according to claims 28 and 32 would appear to be the same as, or only slightly different than, the product of the reference.

10. Claims 29,30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Category WO96/26991 in view of Miller et al US 2 234 539.

Category WO96/26991 is cited for the same reasons discussed above, which are incorporated herein. While the reference cites applying the luminescent coatings to handrails and "escape tools", their application to a step nosing is not cited. However, Miller teaches that step nosings include phosphorescent inserts or overlays (encompassing coatings) which are photo luminescent per

Art Unit: 1762

Specification page 2, so the steps are visible in dark or dimly lit locations. Since stairways/ steps are routinely used for escape from building structures in fire, power outages, or other emergency situations, they would reasonably be called "escape tools" within the intent of Category. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the luminescent layers of Category to the step nosings of Miller et al to produce luminescent step nosing products according to claims 29 and 30 in order to provide greater visibility for escape from building structures in emergency situations.

11. Claims 1,2,4-10,12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spencer et al US 6242056.

Spencer et al teaches applying light-emitting microbead paint compositions to substrates, e.g. luminescent/ phosphorescent coatings. One series of embodiments applies such compositions in a dry, solvent free manner in which heat-fusible resinous binder such as acrylics, epoxy, etc (per claim 10), glass beads (including luminescent), and color enhancers (metallic flakes, mica flakes, etc) are sprayed onto surfaces for added safety due to enhanced visibility. While the reference teaches luminescent beads and not "pigments" per se, it is the Examiner's position that since the beads are providing the same

Art Unit: 1762

luminescence as a luminescent pigment, the beads would have been functionally equivalent particles, and hence their use as a pigment material would have been an obvious variation. The coated surfaces are then baked in an oven at appropriate times and temperatures. While the temperatures used may or may not be the manufacturer's recommendation, it would have been apparent from column 5, 25-35 and the examples of the reference that suitable times and temperatures are required to fuse and cure the binder resins, with times/temperatures being determined based upon the properties of each binder resin system. Clearly, one of ordinary skill would not have arbitrarily selected heating parameters for a given resin system, but rather used either readily available handbooks, websites, or property tables to ascertain appropriate temperatures, and then optimize the times/temperatures for any given oven and article/s being heated. Hence, claims 6-8 are obvious process parameters which are representative of a specific binder, coating apparatus, and article, as explained above. While cooling per claim 9 is not expressly cited, cooling baked coated substrates would have been an obvious step to give the article utility and economic viability. Example 1 teaches metal autobody parts which would have reasonably suggested processed or milled metal parts per claim 12. Such substrates would have included parts containing a depression or

Art Unit: 1762

channel because spray coating is routinely used for successfully coating non-planar surfaces.

Per claims 4-5, while specific ratios of coating composition components are not cited, it would have been apparent to one of ordinary skill to have maximized both mechanical and luminescent properties of the coating because the luminescent particles must be firmly anchored/ bonded to the substrate in order to impart utility and form an economically viable product. Thus, one skilled in the art would have optimized composition dependant upon conventional processing promoters including resin binder type, particle sizes of beads, coating thickness, etc in order to maximize properties to meet a commercial need.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to carry out the dry spraying method of Spencer et al using luminescent beads because of the expectation of forming a luminescent coating on a substrate to provide enhanced safety and visibility.

12. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spencer et al US 6242056 in view of Yonetani US 5698301.

Art Unit: 1762

Spencer et al is cited for the same reasons discussed above, which are incorporated herein. Use of a light reflecting layer between substrate and luminescent layer is not cited.

Yonetani teaches to apply a phosphorescent/ luminescent layer 2 to a reflective surface 3. Column 3, 13-28 teaches that a reflective layer onto which a phosphorescent/ luminescent layer is applied provides the benefit of improving efficiency by reflecting light that escaped being absorbed by layer 2 back into layer 2. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Spencer et al by incorporating a reflective layer as taught by Yonetani onto which the luminescent layer is applied in order to provide a more efficient luminescence of the microbead luminescent coatings.

13. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Spencer et al US 6242056 in view of Weiss US 3983263.

Spencer et al is cited for the same reasons discussed above, which are incorporated herein. Use of a smoothing additive in the powder to be fused is not cited.

Weiss teaches that in thermoplastic powder coating compositions, e.g. acrylics, additives such as glycerides aid in the fusion and flow of the polymer

Art Unit: 1762

coating material during heating to produce a smooth, glossy surface finish equivalent to organic-based coatings.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the coating method of Spencer et al by incorporating smoothing additives as taught by Weiss et al to produce a smooth, glossy surface finish which would have transmitted a maximum amount of light to the luminescent layer to thereby maximize the luminescent properties of the coating.

14. Claims 13-15,17,18,21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanson et al US 3740833.

Hanson et al teaches a powder coating system capable of applying photoluminescent pigment/ particles to a substrate comprising a hopper (fig. 7-8) with powder supply 57 which flows downward by gravity through an orifice onto a restricted/ confined portion of a machined substrate; a conveyor means 23 with mounting holders for moving substrates through machining, coating, and heating station to fuse the coating using a drive belt system (col. 3, 47-66). The mounting holders also allow horizontal and vertical movement, see figure 8; col. 4, 28-53. While a "cooling system" is not recited, it is evident that the fused coated articles are removed from the heating system of column 5, 51-59, which

Art Unit: 1762

thereby enacts cooling per claim 14. As to claim 18, it would have been an obvious variation to place the substrate and orifice in as close contact as possible to prevent spillage and causing deposition of unwanted, costly powder waste.

While a "guide rail system" per se is not cited, it is the examiner's position that the drive system of the reference would have been functionally equivalent to a guide rail system because they are both intended to move substrates to be coated by a hopper system through a series of similar work stations. Therefore, one of ordinary skill would have reasonably expected similar results because the system of moving substrates does not otherwise effect the coating process outcome, absent a clear and convincing showing to the contrary. As to claim 24, it is apparent the samples are loaded and unloaded at respective ends of the conveying means, and it would have been necessary to do so to carry out the intent of the apparatus. Whether the samples were loaded or unloaded manually or automatically is irrelevant because both are known and equivalent means for loading and unloading samples from a conveyor.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the coating system of Hanson et al by substituting a functionally equivalent system for moving substrates through the stations, such

Art Unit: 1762

as a rail system for the drive system of Hanson et al, because they would both perform the same function without effecting outcome of the coating.

15. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hanson et al US 3740833 in view of Delmer et al US 5192027.

Hanson et al is cited for the same reasons discussed above, which are incorporated herein. Use of a tapping mechanism on the hopper is not cited.

Delmer et al also teaches a gravity device for applying powder from a hopper, in which on column 3, 59 to column 4, 2, it is taught to use a vibrator unit 52 in conjunction with milling balls 53 for improved uniformity of powder feed and regulating flow of powder from the reservoir to the substrate. Since the vibratory means would necessarily move the balls and create tapping of the hopper, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the coating system of Hanson et al by introducing the vibratory/ ball means of Delmer et al to provide the recited benefits of improved uniformity of powder feed and regulating flow of powder from the reservoir to the substrate.

Art Unit: 1762

16. Claim 16: the prior art does not teach nor suggest to use a support roller beneath the hopper to support the substrate. The claim is objected to for depending from a rejected base claim.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred J. Parker whose telephone number is (703) 308-3474.



**FRED J. PARKER
PRIMARY EXAMINER**

Fred J. Parker

September 26, 2002

10-031182